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(58) Field of search
UK CL (Edition J) A2A
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(54) Continuous process baking machines

(57) The machine includes an outer case (E) containing stepped raising means (B), and lowering means (D), a transferring unit (C) and a heating unit, in which a plurality of baking molds containing raw materials are raised, transferred and lowered in steps at intervals, and the heating unit comprises a plurality of horizontal heating plates which are moved into place between the molds between movements of the molds.

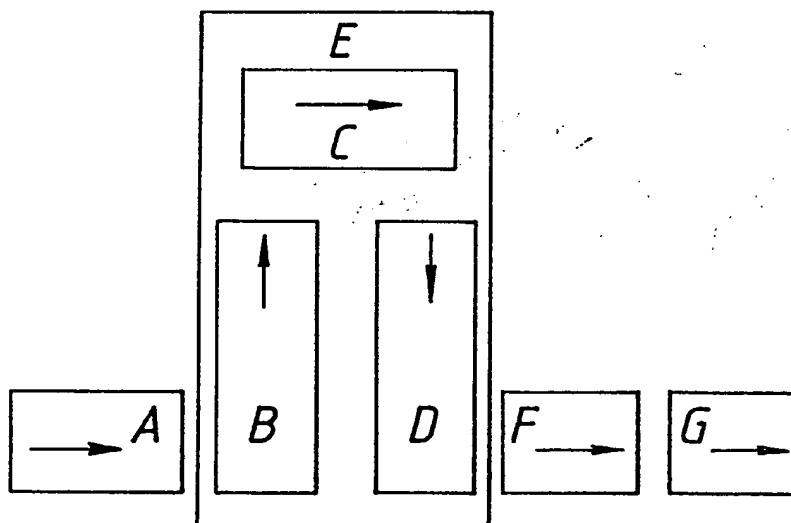


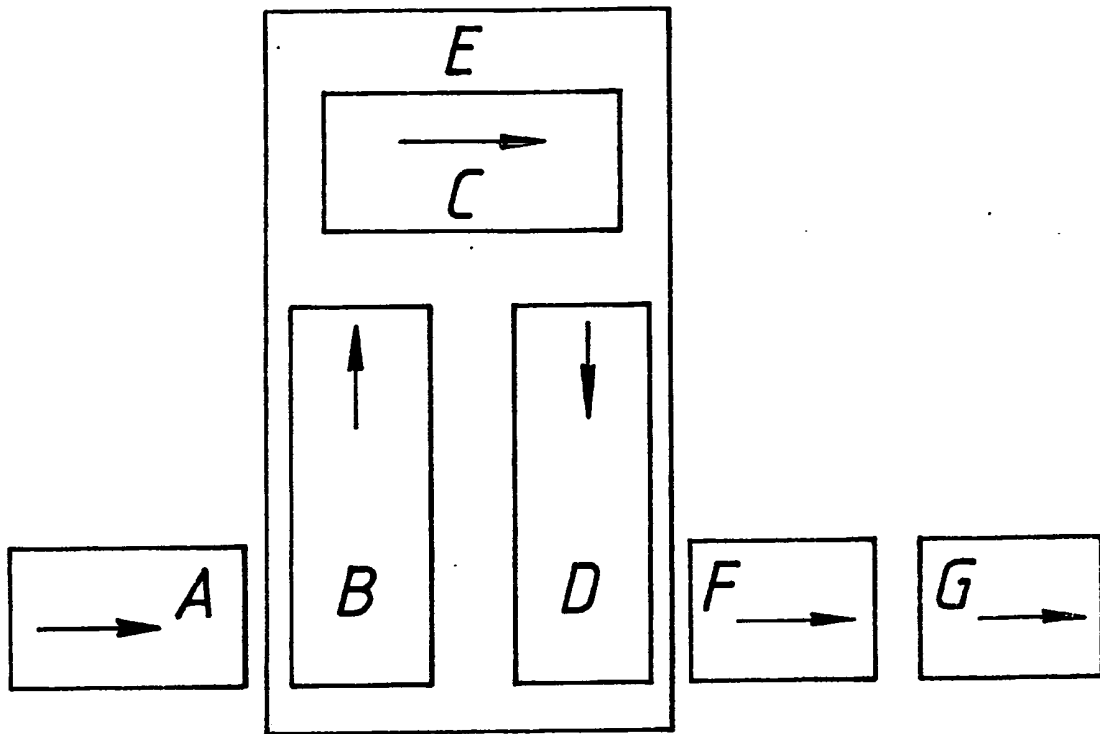
Fig. 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

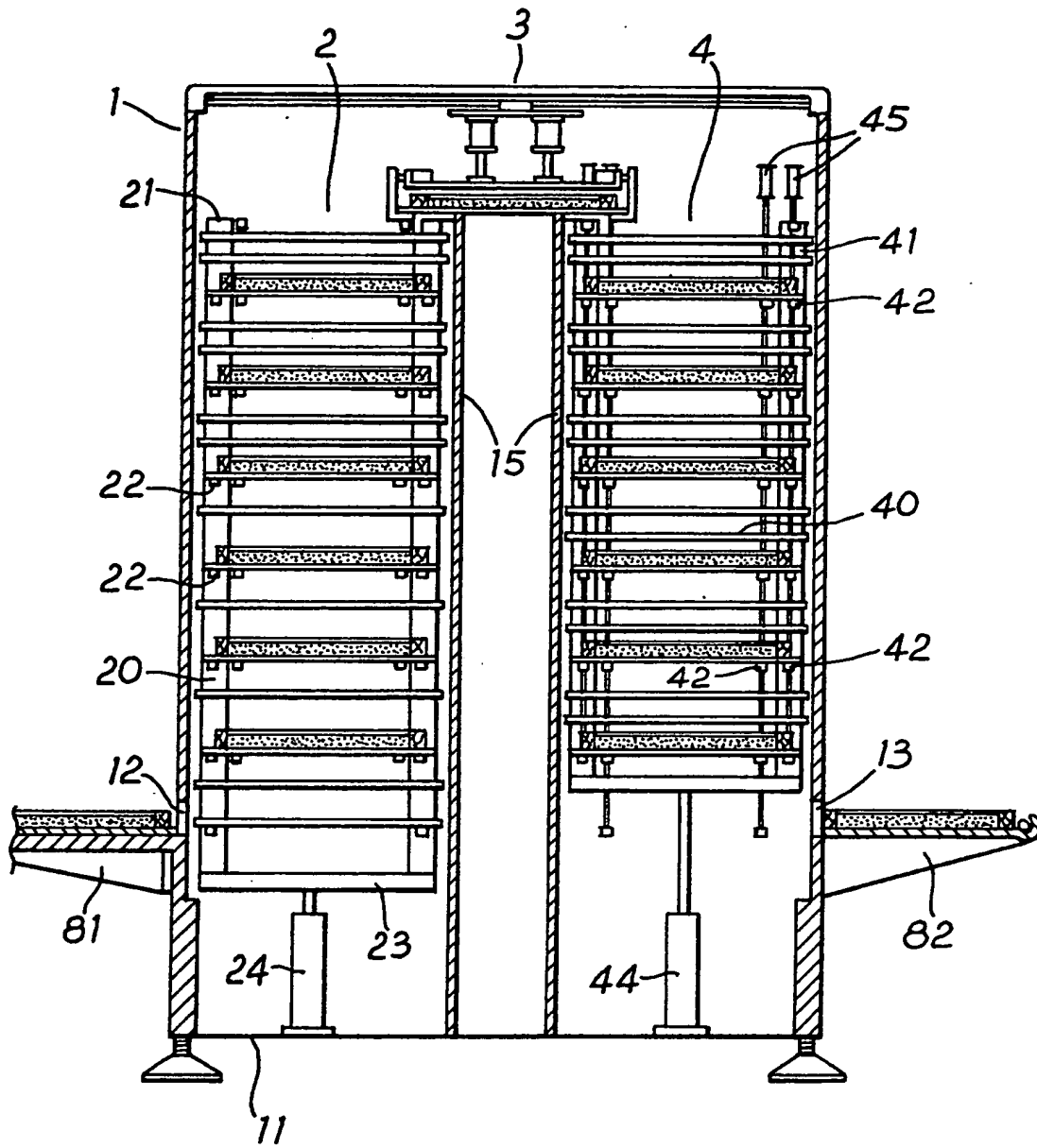
This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1982.

GB 2 217 170 A

1/7

*Fig. 1*

2/7

*Fig. 2*

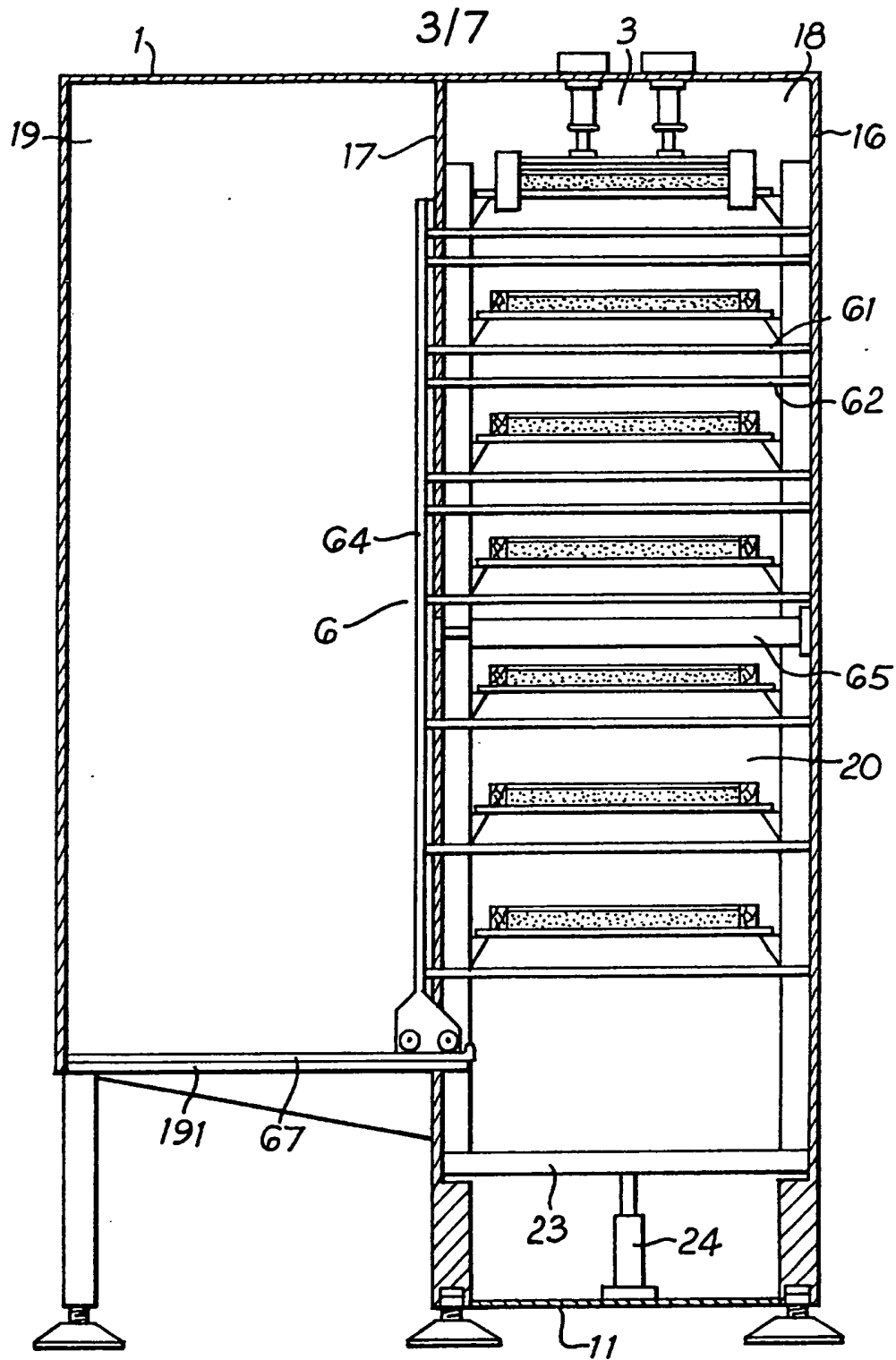
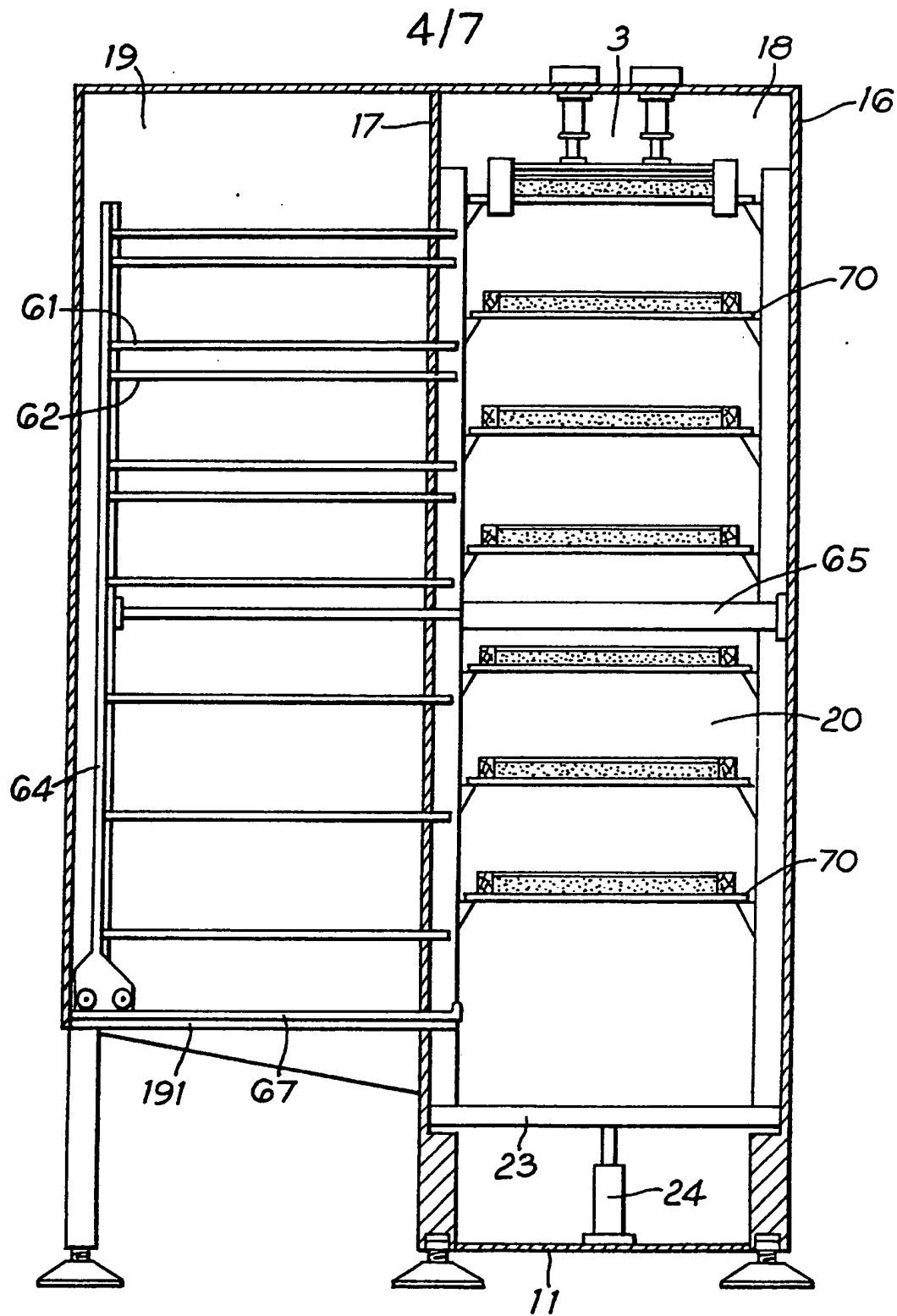
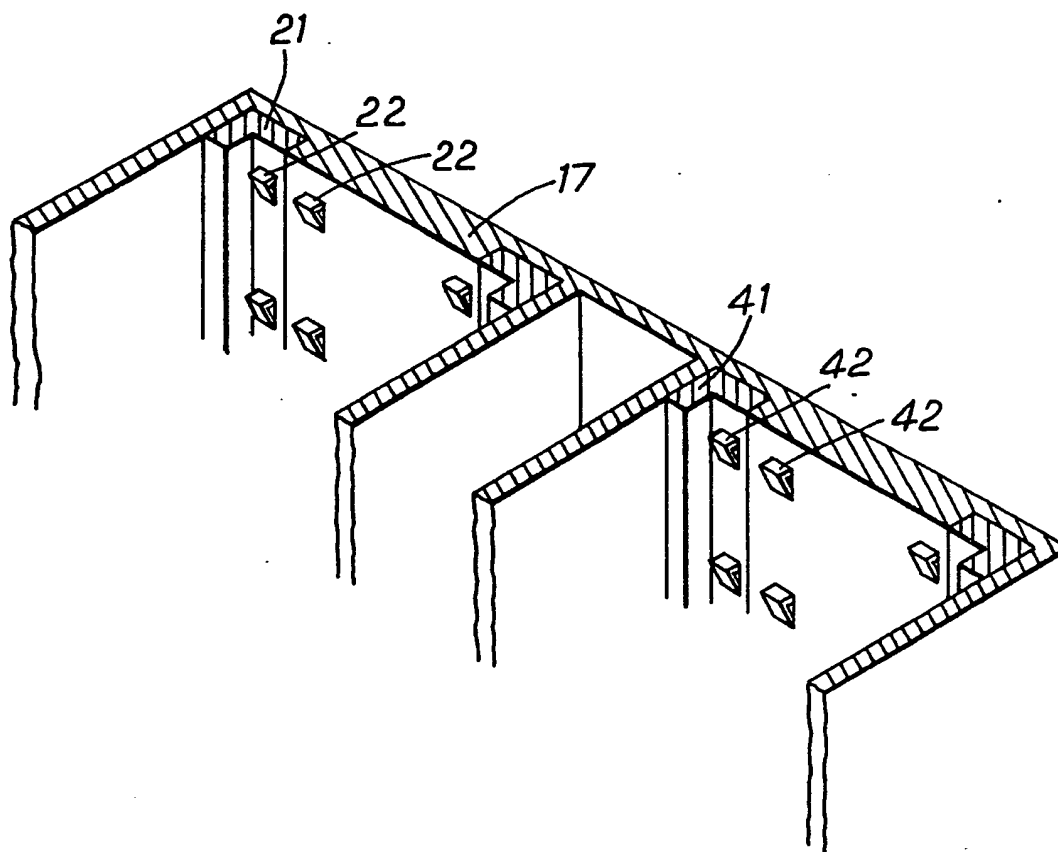


Fig. 3

*Fig. 4*

*Fig. 5*

6/7

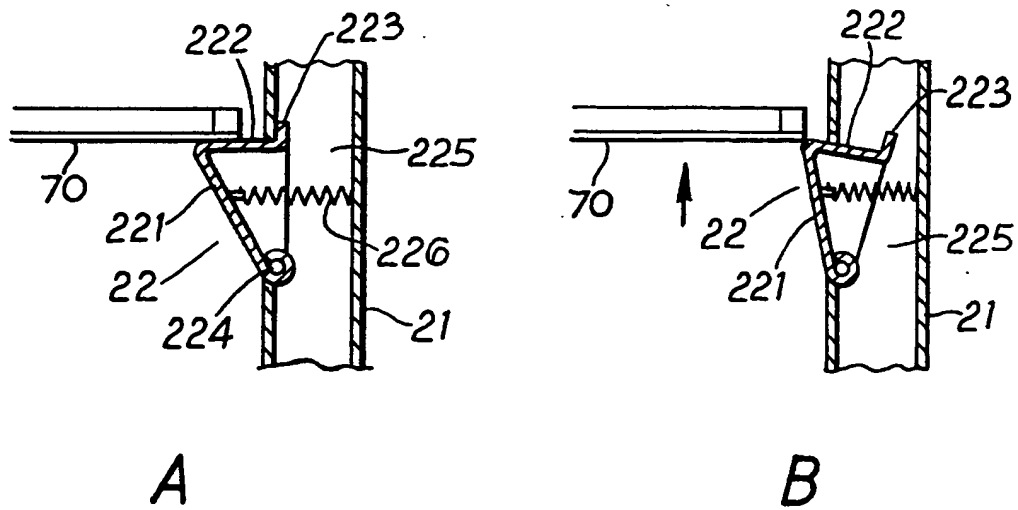


Fig. 6

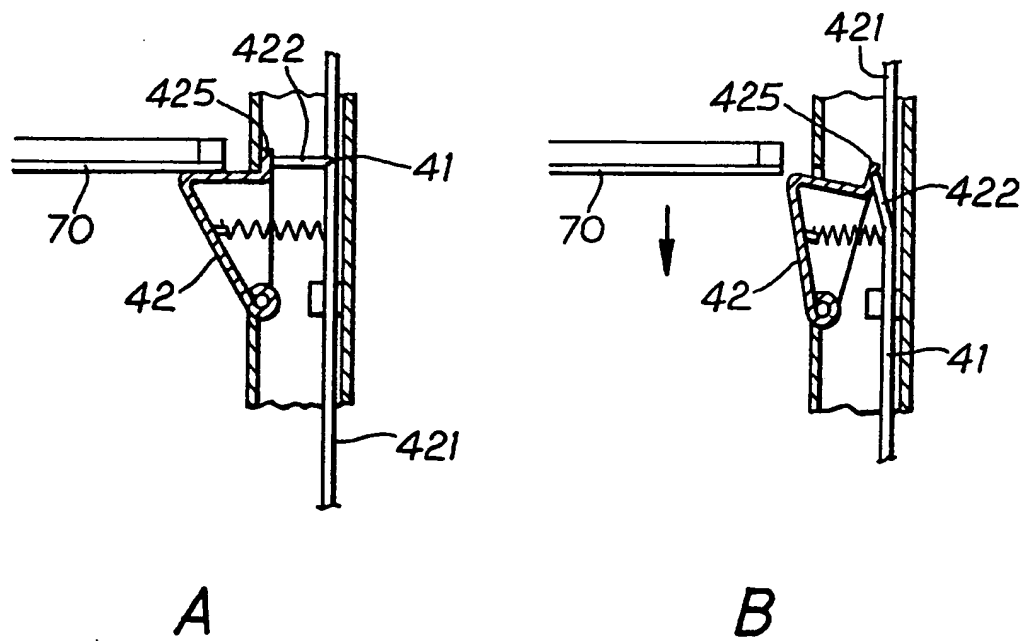
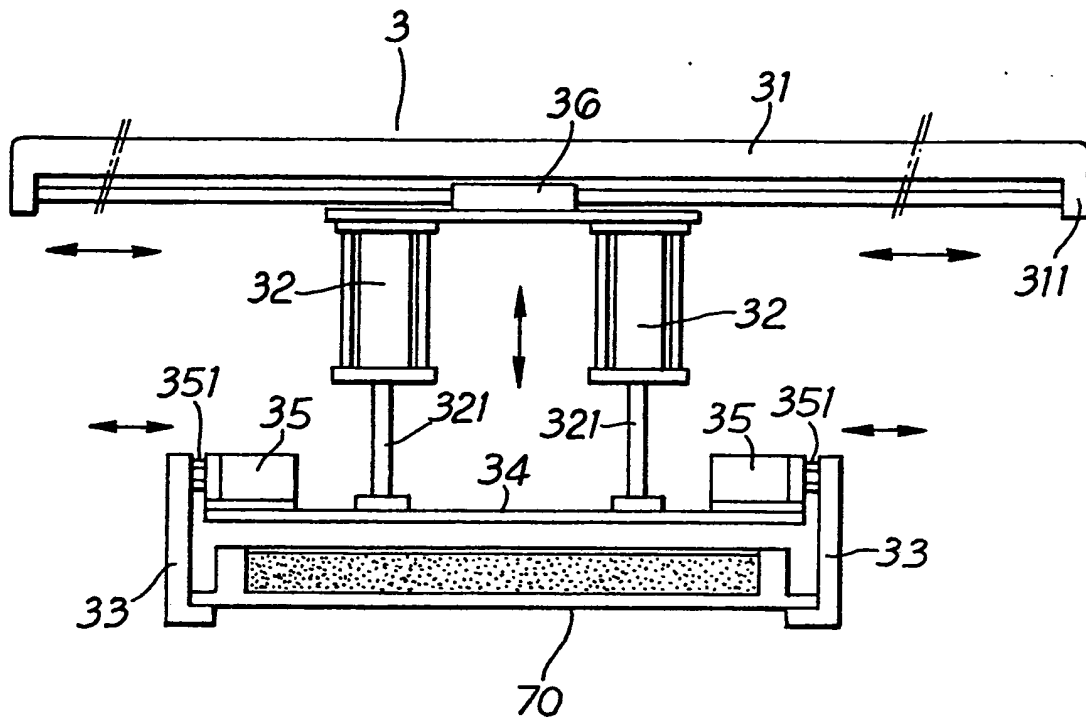


Fig. 7

*Fig. 8*

CONTINUOUS PROCESSING BAKING MACHINES

FIELD OF THE INVENTION

This invention relates to a baking machine, particularly to a baking machine with continuous process.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a continuous processing baking machine with improved baking capacity and effectiveness.

The continuous processing baking machine according to the present invention consists of an outer case divided into a baking space and a shifting space, in which the baking space contains an upgrading means having an upgrading frame supported upon an actuating rod of a cylinder vertically disposed on the floor within the baking space for upgrading a plurality of baking molds containing raw materials, which are entered through an entrance formed in the outer case, a downgrading means having a downgrading frame supported upon an actuating rod of a cylinder vertically disposed on the floor within the baking space for downgrading a plurality of baking molds coming from the upgrading means toward an exit, a transferring unit for transferring the baking molds from the top grade of the upgrading means to the top grade of the downgrading means and a heating unit having a plurality of heating plates and isolating plates substantially horizontally protrude from a frame movably mounted within the shifting space of the outer case. The process of entering the baking molds, upgrading the baking molds, transferring the baking molds, downgrading the baking molds and extruding the baking molds proceeds with intervals for baking the raw materials contained in the baking molds within the upgrading means and the downgrading means by the heating unit, and thus automatically and continuously baking the raw materials therein.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic plan view embodying the arrangement of a continuous baking process according to the present invention;

Fig. 2 is a cross-sectional front view of a continuous processing baking machine according to the present invention;

Fig. 3 is a cross-sectional side view of a continuous processing baking machine according to the present invention in which the heating units is in baking condition;

Fig. 4 is a cross-sectional view of a continuous processing baking machine according to the present invention in which the heating unit is in withdrawn condition;

Fig. 5 is a partial perspective view of a continuous processing baking machine according to the present invention showing the series of projector members gradedly secured to the frames and the adjacent wall;

Fig. 6A is a cross-sectional view showing a projector member normally projected to support a baking mold partially shown and a related bar;

Fig. 6B is a cross-sectional view showing a projector member pushed to rotate clockwise by a rising baking mold partially shown and a related bar;

Fig. 7A is a cross-sectional view showing a projector member normally projected to support a baking mold partially shown, a related bar and an actuating rod with a connecting link;

Fig. 7B is a cross-sectional view showing a projector member controlled to rotate clockwise by an actuating rod through a connecting link, a descending baking mold partially shown and a related bar; and

Fig. 8 is a schematic front view showing a shifting unit of a continuous processing baking machine according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Please refer to Fig. 1, a schematic plan view embodying the continuous baking process of the present invention, wherein the block E represents an outer case of this inventive machine containing smaller blocks of B, C and D which represent an upgrading means, a transferring unit and a downgrading means respectively.

A start position A, where a baking plate of baking mold containing firm paste and other desirous materials is ready to be entered into the case E for baking, locates at a lower side of said case E. A terminal F locates at the opposite side of said case E for residing a baking mold or baking plate containing fully baked cakes or the like extruded from the case E. The block G locates next to the block F represents a cut means for cutting said baked cakes into parts if necessary.

As shown in Figs. 2, 3 and 4, there are two plates 81, 82 secured on the lower opposite sides of the case 1 for providing said start position A and the terminal F. An entrance 12 and an exit 13 are formed in the case 1. The inner space of the case 1 is divided into a baking space 18 and a shifting space 19 by a wall 17. There are rails 67 secured on the floor 181 of said shifting space 19 on which a heating unit 6 can be controlled to shift back and forth by a cylinder 65.

The upgrading means 2 and downgrading means 4 are spacedly arranged in the baking space 18 and separated from each other with isolating plates 15, including an upgrading frame 20 and a downgrading frame 40 respectively supported upon hydraulic cylinders 24, 44, which are vertically disposed on the floor 11 periodically actuating upward and downward movements of the upgrading frame 20 and downgrading frame 40.

Please also refer to Fig. 5, 6, said upgrading frame 20 includes four bars 21 vertically fixed on the corners of a bottom plate 23. A plural series of projector

members 22, which comprises an inclined plate 221 inclining downwardly and rearwards with the lower end rotatably pivoted to swivel about a pin 224 secured in corresponding spaces 225 formed in the bars 21 and their adjacent walls 16, 17, and a top plate 222 having a stop 223 raising from the rear portion normally abutting against an inner face of the space 225, integrally formed on said inclined plate 221, are gradedly installed and normally expelled by compressed springs 226 inserted in respective spaces 225. While the baking mold 70 is carried upwardly by the upgrading means 2, an edge of the baking mold 70 will contact the inclined plate 221 of projector member 22 and press it to rotate clockwise to withdraw. Each series of the projector members 22 is so arranged that the withdrawn projector members 22 permit a trail baking mold pass though upwardly, and will immediately return to support said trail baking mold 70 thereafter.

The construction of the downgrading means 4 is substantially the same as that of the upgrading means 2 except the alternative arrangement of the belonging projector members 42 suitable for the downgrading delivery of the baking molds 70 thereby. As shown in Figs. 2, 7A and 7B, there are additional actuating rod 421 vertically arranged in the bars 41, the wall 17 and the side wall 16 having a plurality of connecting links 422 rotatably pivoted to respective stops 425 of the projector members 42. The actuating rods 421 are controlled by the cylinders 45 to move downwardly to withdraw the projector members 42 prior to the descent of the baking molds 70 and maintain so after the baking molds 70 pass through the corresponding series of the projector members 42, and the actuating rod 421 is controlled to withdraw for releasing the projector members 42 to return to the expelled positions to support the trail baking molds 70.

In short, the upgrading means 2 delivers the baking molds 70 locating therein from one grade to the next grade upwardly and the downgrading means delivers the baking molds 70 therein from one grade to another downwardly toward the exit 13.

The heating unit 6 movably mounted on the rails 67 is controlled by the cylinder 65 to move back and forth, having a frame 64 and a plurality of heating plates 61, which are preferably divided into two groups to respectively serve the upgrading means 2 and the downgrading means 4, substantially horizontally protrude from said frame 64. The maturities of the baking materials are obviously different in accordance with their different locating grades within the upgrading means 2 and the downgrading means 4. In order to offer suitable heating to fully bake the materials so positioned, said heating plates 61 are preferably controlled individually. What is more, the group for serving the downgrading means 4 and the upper portion of the other group for serving the upgrading means 2 are further provided with isolating plates 62 protruding substantially horizontally underneath the corresponding heating plates 61. Said heating plates 61 and the isolating plates 62 will protrude into the intervals between the adjacent grades at the baking space 18 through respective holes formed correspondingly in the wall 17 when the heating unit 6 is controlled to move forth toward the wall 17. The baking materials contained in the baking molds 70 locating at the upper grades of the upgrading means 2 and at all grades of the downgrading means 4 are mostly isolated and baked with less heat according to their maturities. Generally, a baking performance comprising actuating the heating unit 6 to be moved toward the wall 17 so that the heating plates 61 and isolating plates 62 protrude into the baking space, heating and withdrawing the heating unit 6.

are applied within the interval between two acts of the upgrading and downgrading deliveries simultaneously executed.

As shown in Figs. 2 and 8, the transferring unit 3 disposed above the upgrading means 2 and the downgrading means 4 in the baking space 18 for transferring the baking molds 70 from the top grade of the upgrading means 2 to the top grade of the downgrading means 4 comprises a frame 31 with two arches 311 formed at both ends and a rail 312 disposed therebetween, a cable cylinder 36 movably mounted on the rail 312 having driving power of itself for remotely controlled to move along the rail 312, cylinders 32 with actuating rods 321 vertically secured to the bottom of the cable cylinder 36, a base 34 attached to the ends of the actuating rods 321, cylinders 35 disposed on the base 35 having actuating rods 351 substantially horizontally arranged with hook members 33 respectively secured on the ends thereof for cooperatively seizing a baking mold 70 or releasing it through the control of the cylinders 35.

It will be appreciated, of course, that although a particular embodiment of the invention has been described, modification may be made. It is intended in the following claims to cover all modifications which fall within the scope of the invention.

CLAIMS

1. A continuous processing baking machine includes:
an outer case having an entrance and an exit properly formed therein;

an upgrading means locating within said outer case having a cylinder vertically disposed on the floor of said outer case with its actuating rod and an upgrading frame firmly supported upon the end of the actuating rod;

a downgrading means locating within said outer case and spaced from said upgrading means having a cylinder vertically disposed on the floor of said outer case with its actuating rod and a downgrading frame firmly supported upon the end of the actuating rod of the cylinder;

a plural series of projector members rotatably gradedly secured in the upgrading frame, the downgrading means and on their adjacent walls;

a heating unit movably mounted within said outer case having a frame with a plurality of heating plates substantially horizontally protrude therefrom and properly locating within the ranges of the grading intervals of said series of projector members.

2. A continuous processing baking machine as claimed in Claim 1 wherein said outer case is divided by a wall into a baking space containing said upgrading means, said downgrading means and said series of the projector members and a shifting space containing said heating unit which can be controlled to move toward the wall so that the heating plates protrude into the intervals of the baking molds supported on the projector members through the corresponding holes formed in said wall and to withdraw.

3. A continuous processing baking machine as claimed in Claim 2 wherein isolating plates are further provided between said upgrading means and downgrading means within the baking space of the outer case.

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4. A continuous processing baking machine as claimed in Claim 1 wherein the frame of the upgrading means and the downgrading means includes four bars vertically fixed on the corners of a bottom plate.

5. A continuous processing baking machine as claimed in Claim 1 wherein the projector member includes:

an inclined plate inclining downwardly and rearwards with the lower end rotatably pivoted in a corresponding space formed in the frame of the upgrading means, downgrading means or their adjacent walls; and

a top plate having a stop raising on the rear portion disposed upon said inclined plate.

6. A continuous processing baking machine as claimed in Claim 5 wherein the projector member further includes a link with one end rotatably pivoted to the stop of the top plate and the other end rotatably pivoted on an actuating rod vertically arranged and controlled by a proper power unit such as cylinder to move upwardly and downwardly.

7. A continuous processing baking machine as claimed in Claim 1 wherein the heating plates of the heating unit are individually controlled.

8. A continuous processing machine as claimed in Claim 1 wherein the heating plates of the heating unit are divided into two groups which respectively serve the upgrading means and the downgrading means.

9. A continuous processing baking machine as claimed in Claim 8 wherein the heating unit further includes a plurality of isolating plates substantially horizontally protrude from the frame correspondingly underneath said heating plates of the group serving the downgrading means and the upper part of the group serving the upgrading means.

10. A continuous processing baking machine substantially as described herein with reference to the accompanying drawings.